



Comprehensive Review On Gingival Enlargement And Its Management

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Citation: Dr. Shubham Sharma et al. (2024) Comprehensive Review On Gingival Enlargement And Its Management *Educational Administration: Theory and Practice*, 30(5), 11373-11377

Doi: 10.53555/kuev.v30i5.4910

ARTICLE INFO

ABSTRACT

Gingival enlargement, a condition marked by increased gingival size, presents significant diagnostic and therapeutic challenges due to its multifactorial etiology. This review explores the various causes of gingival enlargement, including inflammatory processes, drug reactions, systemic conditions, and neoplastic growths. Clinical features vary from soft, bleeding tissues in inflammatory cases to firm, fibrotic overgrowths in drug-induced instances. Diagnosis involves medical history, clinical examination, radiographic assessment, and histopathological evaluation. Management strategies are tailored to the underlying cause and range from improving oral hygiene and modifying local factors to surgical interventions such as gingivectomy, gingivoplasty, and periodontal flap surgery. Effective postoperative care and regular follow-up are essential for successful outcomes. Emphasizing prevention and integrating evidence-based practices, this review aims to enhance the management of gingival enlargement, improving patient care and quality of life.

Key words: Gingival overgrowth, Gingival hyperplasia, Gingival diagnosis, Gingival diseases, Decision tree.

Introduction

Gingival enlargement (G.E), or gingival overgrowth (G.O), is characterized by an increase in gingival size and can arise from inflammatory, drug-induced, systemic, neoplastic, or false causes.¹ It may be localized or generalized, with forms ranging from marginal and papillary to diffuse. The most common type, plaque-induced inflammatory hyperplasia, typically resolves with improved oral hygiene and debridement, although fibrotic cases may persist. Initial management focuses on cause-related therapy, including oral hygiene education and modification of plaque-retentive factor.² Persistent cases may require surgical interventions such as gingivectomy, gingivoplasty, or periodontal flap surgery. Thorough history-taking, examination, and diagnosis are crucial for effective management, with prevention as a priority unless severe conditions necessitate referral or surgical intervention³.

Etiology of Gingival Enlargement

The etiology of gingival enlargement can be classified into several categories⁴, Gingival enlargement (G.E) can result from various etiologies, including chronic and acute inflammatory responses due to plaque accumulation and localized infections, respectively. Drug-induced G.E is associated with anticonvulsants like phenytoin, calcium channel blockers like nifedipine and amlodipine, and immunosuppressants like cyclosporine. Systemic conditions such as hormonal changes during puberty, pregnancy, and contraceptive use, as well as leukemia and genetic disorders like hereditary gingival fibromatosis, also contribute to G.E. Neoplastic causes include benign tumors such as fibromas and malignant tumors like oral squamous cell carcinoma. G.E can be classified by location and distribution: localized (single/group of teeth), generalized

(throughout the mouth), marginal (gingival margin), papillary (interdental papilla), diffuse (marginal, attached gingiva, and papilla), and discrete (isolated, tumor-like enlargements).

Scoring of gingival enlargement⁴:

- Grade 0: no signs of gingival enlargement.
- Grade I: enlargement confined to interdental papilla.
- Grade II: enlargement involves papilla and marginal gingiva.
- Grade III: enlargement covers three quarters or more of the crown.

Clinical Features

The clinical presentation of gingival enlargement varies with its underlying cause:

1. Inflammatory Enlargement:

According to **Newman et al**⁴ factors contributing to plaque can predispose individuals to enlargement. In chronic cases, the inflammation typically begins with mild swelling of the I.P and marginal gingiva, eventually forming a rounded bulge resembling a life preserver around the affected teeth. This bulge may progressively grow to cover the tooth crown and is usually painless unless aggravated by trauma or acute infection.

- **Chronic:** Soft, red, swollen gingiva that bleeds easily upon probing. The interdental papillae are typically the first areas affected (Fig-1).



FIG-1: CHRONIC INFLAMMATORY GINGIVITIS



FIG-2: PERIODONTAL ABSCESS

- **Acute:** Rapid onset of swelling, redness, and pain, often associated with a purulent discharge. **Meng**⁵ further classifies gingival abscesses, occurring in previously healthy sites due to foreign body impaction, periodontal abscesses, which can be acute or chronic and are related to periodontal pockets, and pericoronal abscesses, associated with incompletely erupted teeth (Fig-2).

2. Drug-Induced Enlargement:

The growth initially presents as a painless, bead-like enlargement in the papillary region, which then extends to the facial and lingual areas (Fig-3). As the overgrowth progresses, a substantial fold of tissue can be observed covering a significant portion or the entire crown. This can lead to various problems such as challenges in maintaining oral hygiene and chewing, potential disruptions in tooth eruption, speech interference, and aesthetic concerns.^{6,7}

- **Anticonvulsants and Calcium Channel Blockers**⁸: Firm, fibrotic, and non-tender overgrowth, commonly affecting the anterior gingiva. The gingiva appears pale pink or normal in color. **Dacosta et al**⁹ observed that systemic administration of phenytoin accelerates the healing of gingival wounds in non-epileptic individuals and increases the tensile strength of healing abdominal wounds in rats.

- **Immunosuppressants:** Similar presentation to other drug-induced enlargements but may have a more generalized distribution. **Mariani et al**¹⁰ performed microscopic examination and reveals the presence of numerous plasma cells and an abundance of amorphous extracellular substance, suggesting a hypersensitivity response to cyclosporine.



Fig-3: DRUG INDUCED GINGIVAL ENLARGEMENT



Fig-4: ENLARGEMENT IN PREGNANCY

3. Systemic Disease-Related Enlargement:

- **Leukemia:** Diffuse, spongy swelling with a tendency to bleed spontaneously. The gingiva may appear purple or bluish-red. **Demirer et al¹¹** observed that acute monocytic leukemia (M5) exhibited the highest occurrence of gingival infiltrates (66.7%), followed by acute myelomonocytic leukemia (M4) (18.5%), and acute myeloblastic leukemia.

- **Puberty:** Hormonal changes can exacerbate the response to plaque accumulation, resulting in enlargement. This manifests as bulbous growths in the papillary region, extending to the facial area, while the lingual region remains relatively unaffected.¹² **Sutcliffe¹³** conducted a longitudinal study involving 127 children aged between 11 and 17 years revealed a notable initial prevalence of G.E, which tended to decrease as the children aged.

- **Hormonal:** Enlarged, edematous, and erythematous gingiva with a tendency to bleed, pregnancy induced gingivitis (Fig-4). **Raber-Durlacher et al¹⁴** mentioned alterations in the subgingival microbiota, including an increase in *Prevotella intermedia*.

4. Neoplastic Enlargement:

Benign gingival enlargements present as localized, firm, non-tender masses that can be either sessile or pedunculated. These include papillomas, which are benign growths of the surface epithelium associated with the human papillomavirus (HPV), and epulis (Fig-5), a broad term for any distinct tumors or tumor-like masses in the gingiva. Fibromas (Fig-6), another type of benign enlargement, typically arise from the connective tissue of the gingiva or the periodontal ligament. In contrast, malignant gingival enlargements are rapidly enlarging, often ulcerated, and may be painful. These lesions can have irregular shapes and cause bone destruction, indicating a more serious and potentially aggressive condition.



Fig-5: Epulis



Fig-6: Fibroma

5. False Enlargement:

False Enlargement of the gingival tissues do not reflect true tissue enlargements but can mimic it due to enlargement in the underlying osseous or dental structures.

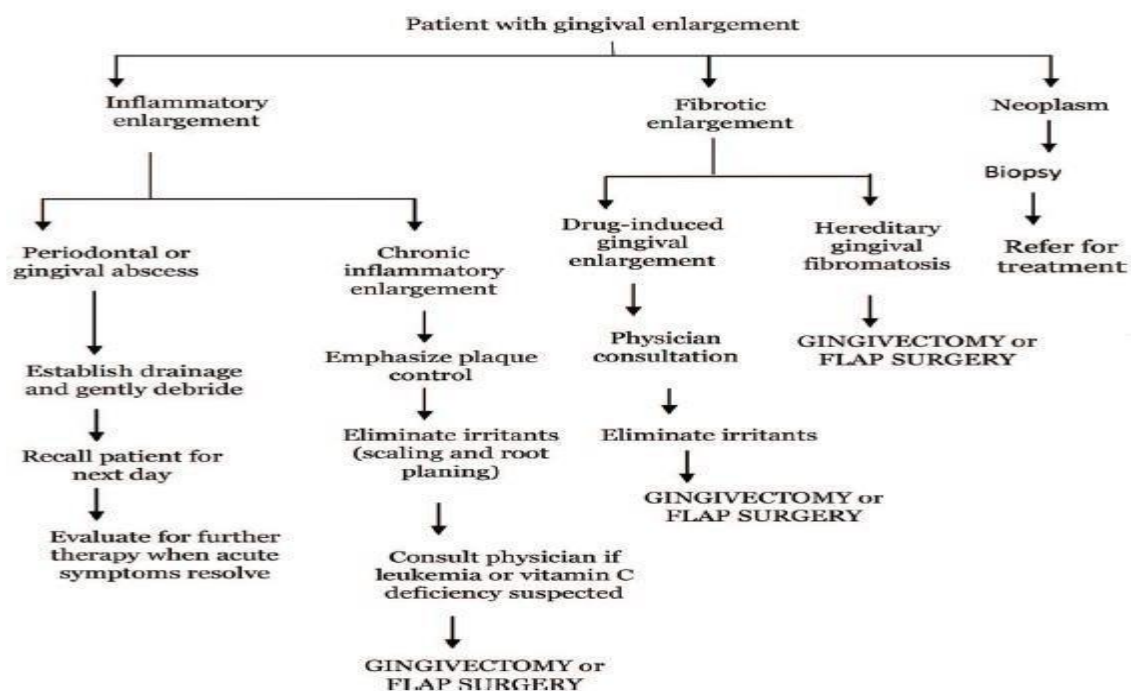


FIGURE 7: TREATMENT PLAN FOR GINGIVAL ENLARGEMENT¹⁷

Diagnosis

Diagnosing gingival enlargement involves taking a detailed medical history to identify etiological factors, conducting a comprehensive clinical examination to assess the enlargement's extent and characteristics, and using radiographic assessments to evaluate bone levels and detect underlying pathology. Histopathological examination, including biopsy and microscopic analysis, is essential for suspected neoplastic growths or unclear diagnoses.

Management

Treatment

Treatment for G.E is tailored to address the specific cause and underlying pathology. The approach varies depending on the type of enlargement and is guided by the clinical and pathological presentation of signs and symptoms. Phase I therapy should be initiated prior to any surgical interventions.

The management of gingival enlargement requires a tailored approach based on the underlying cause:

Non-surgical management of gingival enlargement prioritizes improving oral hygiene, primarily targeting plaque-induced cases. This involves professional cleaning through scaling and root planing to eliminate plaque and calculus. Patient education is pivotal, focusing on effective brushing and flossing techniques, using antimicrobial mouth rinses, and stressing regular dental visits.¹⁸ Addressing local factors contributing to plaque retention is essential, including adjusting or replacing problematic restorations and modifying orthodontic appliances to minimize plaque buildup. In cases of drug-induced gingival enlargement, collaboration with the patient's physician to explore alternative medications or adjust dosages may be necessary.

When non-surgical measures are insufficient, **surgical management** of gingival enlargement is necessary. Gingivectomy, the removal of excess gingival tissue to restore normal contours, can be performed with a scalpel (effective but with more bleeding and longer healing), electrosurgery (reduces bleeding but requires precision), or laser surgery (precise and promotes faster healing, sometimes needing only topical anesthetic, but costly and requiring specialized training). Gingivoplasty, often combined with gingivectomy, reshapes the gingiva for better aesthetics and function¹⁹. Periodontal flap surgery, indicated for significant periodontal attachment loss, involves lifting the gingival tissue for thorough debridement and bone recontouring.

Effective postoperative care is crucial for the success of surgical treatment of gingival enlargement. This includes managing postoperative discomfort through the use of analgesics, reducing the risk of infection and promoting healing with antimicrobial mouth rinses, and ensuring regular follow-up visits. These follow-ups are essential for monitoring the healing process, maintaining oral hygiene, and promptly addressing any complications that may arise.

Conclusion

Gingival enlargement is a complex condition requiring a comprehensive diagnostic approach and individualized management strategies. Prevention through meticulous oral hygiene and regular dental check-ups is paramount. A combination of non-surgical and surgical treatments can effectively manage this condition, improving patient outcomes and quality of life. Future research should focus on enhancing non-invasive treatment modalities and developing targeted therapies to manage drug-induced and systemic-related gingival enlargements. By integrating current evidence-based practices with clinical expertise, dental professionals can effectively manage gingival enlargement and optimize patient care.

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